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RE. 1

sunshine

THE MAGAZINE FOR TEENS



sunshine

YOUTH MONTHLY WITH A WORLD VIEW
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PURPOSE

This Asian Youth Monthly is sponsored by the *Children's Sunshine Concerns*, a registered Non-profit educational Public Trust organized to ensure the all-round welfare of youth and to promote international understanding. **SUNSHINE**, founded in 1954, aims at fostering among boys and girls, 12-16, a democratic attitude, the service-above-self ideal, a sense of national unity and a world outlook. It also provides them with general knowledge, citizenship training, hints on efficiency and growing up, and appealing English language practice—all the pleasant way. It seeks to serve their age-equals abroad as a dependable bridge of friendship, and to meet the needs and interests of youth everywhere by giving them literature that is educative, edifying and entertaining.

FOUNDER-EDITOR:

Dr. G. S. Krishnayya (1898-1967)

One-time Principal, Govt. Teachers' College, Belgaum; Educ. Attache, Indian Embassy, U.S.A.; Inspector of European Schools, Bombay State; Prof. of Education, Kolhapur & Mysore. Author of *Pathways to Prose and Poetry*, *Citizenship Training in School*, *The Rural Community and the School*.

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CONTENTS

	Page
EDITORIAL	
Develop Concentration	5
STORIES	
The Enjoyable Punishment	10
The Resident Patient—2:	
Two Strange Visitors	16
The Greedy Mandarin	23
Shipwrecked!	28
ARTICLES	
Why Lincoln Grew a Beard!	6
Louk Sua—Thailand's Young 'Tigers'	8
Spotlight on Table Tennis	20
SCIENCE & TECHNOLOGY	
Rats—Ingenious Little Creatures	12
Science News & Notes	15
Rockets	27
FEATURES	
A Quiz on Industries	9
India: Answers to last month's quiz	18
Sports	20
Better English:	
Good Language Habits—9	22
Puzzles & Pastimes	24
Here & There	25
By You: Young Writers' Section	27
Laughs	31
Pen Friends	33
Peanuts	34
How well have you read this Issue?	34

OUR COVER

Scouts exemplify the qualities of discipline, obedience and loyalty
(See pages 8, 9)

February, 1975

3

Give your child the extra energy to stay ahead!

**Christopher
Columbus II.**
Loves adventure.
Discovers exciting
new routes from
school to home—
every day. Guess
where he gets all
that extra energy
from?



She's right again!
A champ at
homework and at school.
She even helps her papa
with accounts.



Give your child Bournvita every day!

Bournvita contains cocoa,
malt, milk and sugar to give
your child that extra energy
he needs to stay ahead.
Every cup provides much
needed protein,
carbohydrates and calories.
So give your child Bournvita
every day. Twice a day.
And you have it too.
It's a favourite family drink!

Cadbury's
Bournvita
Brought up right
Bournvita bright



OBM/4032

Develop Concentration

WHAT is the difference between cooking in a pressure cooker and cooking in an ordinary vessel? The advantage of the pressure cooker is that it cooks the food thoroughly and quickly. Why? Because all the heat and steam are held in the vessel instead of being allowed to escape. If the heat escapes, naturally the cooking takes longer. That is exactly what happens when you allow your thoughts to roam all over the place. Eye-wandering is closely related to mind-wandering. By the way, it's not only the sages and saints who close their eyes for maximum progress and intensity, and the achievement of bliss. Even the cat knows that she must shut her eyes to get the fullest satisfaction from the milk she drinks! Go at your work always feeling, "This one thing I do." Concentrate.

Do you know that of the brain's actual thinking space, less than half is needed to read the words of a book, even though we read rapidly? In the case of listening, we are told, only 10% is used. What happens to the rest? It does not stand vacant. Either you take charge of your thoughts and put your brain to work, or it will fill with gossip, amusement, hunger-pangs, day-dreams, last night's party and the sights and sounds around. Don't lead yourself into temptation! Fill in those wrongly used spaces with wise thoughts and direct them towards the task of learning. Full attention can then be focussed on the task at hand, and efficient use made of study-time at home as well as while listening in class. To hit your target, just miss everything else!

So, before you start your work, clear your desk of distractions. Then get together all you are going to need for studying the sub-

ject concerned; eraser, pen, paper, books, notes, atlas, etc. Thus you won't be tempted to jump up to fetch this and that and so lose time and concentration. A short rest, limited to five or ten minutes, after concentrated study is another thing. To get rid of drowsiness, walk out and exercise in the open. This way, you won't get so far off from the subject that it becomes hard to warm up and settle down again. Occasionally you may reward yourself for some serious concentrated effort and achievement—holding the carrot in front—or postpone some fun. But don't cheat and hurry through a badly done job.

Pleasure comes after duty and is then really the greater (a) because it has been well done and (b) because the job is behind you and not ahead, staring mockingly at you. Concentration takes 'won't power' as well as 'will power'!

As you face homework or exams, remember your "education" goes beyond the subjects you are studying, or the rank or class you may get. Everything you may be expected to do, calls for effort. While you are later using up time and energy trying to break your bad habit of dodging a job, or playing around with it half-heartedly, you will see others less able, but more purposeful, going ahead surely and steadily. Everybody who became somebody—Inventor or Explorer, Writer or Scholar, Athlete or Artist—did so only as a result of hard persevering labour. The ability to concentrate, to control and discipline the mind, can be your most valuable gain from your school days. Remember, the more steam you put into your work, the louder you can whistle when it's done!

YOUR EDITOR

Why Lincoln Grew A Beard!

IT was neither a drawing nor a painting that little Grace Bedell held in her hand, that autumn day in 1860. There were no lines in it nor colours. And yet, she could make out every hair on Mr. Lincoln's head, every crease in his clothing! She was looking at the first photograph of him she had ever seen. Just then in her little room, the oil lamp threw shadows on the black-and-white photograph, making a frame around the face. And presto! The hollow cheeks were filled by—whiskers!

A few days later, two secretaries were as usual going through the letters that reached Lincoln's office each day.



Westfield, Chautauqua Co., N.Y.
October 15, 1860.

Hon. A. B. Lincoln

Dear Sir,

I am a little girl 11 years old, but want you should be President of the United States very much so I hope you won't think me very bold to write to such a great man as you are.

Have you any little girls as large as I am? If so give them my love and tell them to write to me if you cannot answer this letter. I have got four brothers and part of them will vote for you any way and if you will let your whiskers grow I will try to get the rest of them to vote for you. You would look a great deal better for your face is so thin. All the ladies like whiskers and they would tease their husbands to vote for you and then you would be President

Grace Bedell

Lincoln's secretary, Hay, who read Grace's letter, was amused. "Now the little girls are telling the Chief how to get elected.

This one sure has an original idea—thinks he ought to grow whiskers."

But the serious-minded Nicolay said,

"Throw it away and get on with your work."

Mr. Herndon, Lincoln's partner in his law firm, walked into the office just as Nicolay insisted, "No more whiskers, Hay. No more little girls. Let's have a little more responsibility instead."

"Little girl?" demanded Mr. Herndon, "The Chief loves them. Can't pass one in the street without stopping to talk to his 'little sister'. What were you saying about a little girl?"

And not long after, Grace got this letter.

Private

Springfield, Oct. 19, 1860

*Miss Grace Bedell
Westfield, N.Y.*

My dear little Miss,

Your very agreeable letter of the 15th is received. I regret the necessity of saying I have no daughters. I have three sons, one seventeen, one nine, and one seven years of age. They, with their mother, constitute my whole family. As to the whiskers, having never worn any, do you not think people would call it a piece of silly affectation if I were to begin it now?

*Your very sincere well-wisher,
A. Lincoln*

On February 16 a special train passed through the station near Westfield, carrying the newly elected President to Washington and the White House, his official residence. The train stopped at the station, where a large crowd had gathered to see their President. Grace was there too. But all she could see was a tall, black hat, sticking out above all the others.

There were cries of "Speech! Speech!" and then silence.

"Ladies and gentlemen," Grace could hear a voice say, "I have no speech to make and no time to speak in. I appear before

Lincoln's birthday falls on February 12. Lincoln became the 16th President of the USA in 1861.

you that I may see you and that you may see me. I have but one question, standing here beneath the flag of our country—Will you stand by me as I stand by the flag?"

All Cried out aloud "Yes—yes—we sure will, Abe."

His Little Correspondent

Then once more Grace heard that thrilling voice say, "I have a little correspondent in this place, a little lady who saw what great improvement might be made in my appearance. If she is present, I would like to speak to her."

"Tell us the name!" the people shouted.

"Her name is Grace Bedell," came the reply.

Led by her father, Grace was lifted on to the platform. Somewhere above the big boots and the long legs she heard a slow chuckle. "She wrote me that she thought I'd look better if I wore whiskers . . ."

The tall man lifted her high into the air, kissed her on both cheeks and put her down. Her cheeks burned, not only from happiness but from a scratching, for when she looked up, she saw—growing all around the rugged face and covering cheeks and jaw so that only the upper lip remained free—whiskers!

"You see, I let them grow for you, Grace," said Mr. Lincoln.

Are you a Subscriber?

Only a subscriber can score points in our quizzes, contests, By You's, etc. Points are converted into cash prizes every August.

LOUK SUA

Thailand's Young 'Tigers'

The World Scouts and Guides day falls on February 22

SCOUTING is the key element in Thailand in building patriotism and nationalism in youth. The movement started life in 1911 as a youth corps loyal to the king.

The gifted but eccentric Thai monarch of that period, King Vajiravudh, had created for himself a 'pocket army' which he personally drilled and instructed in the palace grounds. This "Wild Tiger Corps", as the king named it, was a source of annoyance to the regular army and later disappeared, but the cadet branch, "Louk Sua" (Sons of the Tiger) survived.

Troops of these "Young Tigers" were formed at Government schools throughout Thailand. At that time scouting in Britain itself had only started three years earlier and it was not until 1922 that the Thai Scouts affiliated with Baden Powell's world movement.

The Scout movement is an integral part of the Thai government's school system and its role is even defined in an Act of Parliament—the Boy Scout Act of 1947. The movement receives an annual subsidy from the government and government officers on deputation play an important part in running it. Most Scout leaders are, of course school masters and therefore also Government servants. The result is that virtually every schoolboy in Thailand is a Scout: one reason why this comparatively small country has the sixth largest Scout movement in the world—half a million regular Scouts!

Thai Scouts command great respect, particularly the Senior Scouts, their muscular legs emerging from curious long shorts and their shirts covered with multiple badges. In fact, theirs is probably the one uniform

in Thailand that evokes universal respect.

The Thai Scouts go beyond their counterparts in other countries in that they can and do play a vital role as a reserve public service. All Senior Scouts—there are over 40,000 of them—are trained in traffic management and crowd control by the Thai police. Some also specialise as ambulance and first aid groups, fire-brigade auxiliaries and flood control teams.

All this is of great practical utility as the Scouts are frequently called upon to do these duties. In situations of social strife their youth and neutrality make them ideal emergency personnel.

During the cremation ceremony of the victims of the October 1973 uprising the Scouts were everywhere—directing traffic,



Sea Scouting is an important branch of scouting, extending the field of its useful services to rivers, waterways, etc, especially in an emergency like a flood.

manning the barriers and the first-aid tents, mounting a guard of honour on the dead, and waiting in solemn ranks to greet their king.

The first couple of days after the uprising, when all the police had disappeared, the Boy Scouts literally held Bangkok together. Hundreds of them directed traffic throughout the city. Some cleaned up the debris-covered streets and others stood by as reserve first-aid and fire-brigade teams.

The discipline and unity of the Scouts as a mass organisation, had led in the past few years to the development of the "Village Scouts". Village Scout troops have been formed now in many of those provinces of Thailand where there is active revolt against authority.

History

Although the Thai Scout movement started as a royal youth corps, it was later absorbed into the world-wide Baden Powell organization. The 'Sons of the Tiger' have always been as close to the Baden Powell

path as they are now. Before World War II the Thai Scouts were only loosely within the world movement. During the war the Scouts were absorbed into a Nazi type of youth programme which became more specifically para-military.

After the war the Scouts were remodelled for the first time on purely British lines. Thai Scouters went for training to Gilwell Park in England, and the uniforms and badges were changed. The Thai Scout movement today is more British in some superficial ways than that of Britain. For instance, a few years ago, Britain changed over to the American system of Rangers whereas Thailand still maintains its Senior Scouts and Rovers.

In spite of the various changes it has undergone, the movement retains its character as a youth corps whose nationalism is more loyalty to king than government and which maintains its distance from any political group. A Scout official rightly remarked, "Thailand is going to be the world's first Boy Scout State." 

A Quiz on

INDUSTRIES

- I. Mention two major products of the following sectors:
1. Small-scale Industry 2. Cottage Industry 3. Village Industry.
- II. What are the main raw materials required for:
1. Cement 2. Fertilizer 3. Steel?
- III. Where are the following located and for what products are they noted?
1. Anand 2. Titagarh 3. Dalmianagar
- IV. 1. Mention two places known for their sports goods.
2. Name the goods.
- V. State three products of which India is a leading producer in the world.
- VI. 1. Name three public sector factories which manufacture consumer articles. 2. What are those articles?
- VII. Mention three major countries
1. to which we export 2. from which we import goods.
- VIII. State three common reasons for under-production by many industries.
- IX. State three major purposes sought to be achieved by the government's industrial policy.
- X. Name three major sources of finance to industries.

Send your answers to these questions on an independent sheet, mentioning clearly your name and SR Number. Upto 4 Points will be awarded on merit. Last Date: Feb. 28.

The Enjoyable Punishment

EXPEL them!" had been the energetic advice of the lady-teacher. And she had good reasons for this advice.

Thirteen pupils, six on the one side, seven on the other—all senior boys—had fought a regular street battle. All had worn the uniform of our school. This uniform is well known in town and is respected. It was a shame!

The teacher had severely warned the fighters. They had stopped for a moment, but the fighting had been taken up again two hundred yards further. They had even said: "Madam, even if you stop us now, tomorrow we shall fight again!" Evidently this amounted to gross indiscipline. Hence the teacher's severe verdict: "Expel them!"

Since a large number of students was involved, I decided to consult some more teachers. However, all held the same opinion. But when they saw me hesitating, they suggested instead that I should administer a corporal punishment in the presence of all the other pupils. The educational code in this matter reads as follows. "Corporal punishment is allowed, if inflicted exceptionally and moderately." The boys would lose face before the thousands. A severe punishment indeed.

Somehow, I could not bring myself to accept either of these alternatives. To be expelled from school meant an uncertain future for all the pupils concerned. The alternative, a humiliating public caning, might not restore amity or peace, for one group was quite likely to throw the blame on the other and this would stir up more animosity. But I myself had no better solution to offer. What we needed was that, whilst punishing them, we should have means to bring both groups to a reconciliation.

Suddenly it dawned upon me: "The absent-minded professor." Yes! This might be the answer! This most amusing film had been running for quite sometime. I had seen it myself some days before and I had laughed straight through it! The fighters were to be taken to the cinema and this would be their punishment that they would be kept in suspense until the last moment, that is until four days from now. Yes, indeed. This would be the solution! When I put the plan before the teachers, their natural reaction was: "How can you punish offenders by means of a nice film? What has this to do with punishment?"

I replied: "Practically all of these boys have educated parents. The boys know that at this very moment we are dealing with their case. When no one reveals what will happen to them, they will fear the worst. If dismissed, they will get admission nowhere. Well, you might tell them this much: every rat has a tail and that, of this one, they had yet not seen the end. If all of you promise to keep it a secret," I said, "then I should like to try this experiment."

REVIEW

THE CALL OF THE WILD by Leon Jungblut, Shakuntala Publishing House, Bombay; 92 Pages

In his book 'The Call of the Wild', Leon Jungblut shares with the young reader, his adventures and experiences in different parts of India. The first part deals with his hunting expeditions in the jungles. Stories of fun and wisdom about the tribal people of Central India form the second part. The third part contains 'Some More Thrills'. Any boy or girl who reads the 'The Enjoyable Punishment', reproduced here, "may—after a scrap in school—pray secretly to God to inspire his or her Principal to mete out a similar punishment!"

The daring of the proposal struck them all. All were ready to co-operate. "So, not a word. Keep mum!" And mum they remained!

After the conference I called the thirteen sinners together and declared curtly: "Sunday morning at 9 a.m. everyone has to report here. School uniform is obligatory. Clean shoes, five rupees in your pocket. Now you may go."

In the course of the following days things started happening. In their distress the two groups took up contact with each other; at first hesitatingly, then quite freely! They wondered what was going to happen! Some had already been punished by their own parents. They all just did not know what to think of the situation. Would the boys be dismissed? Would they be sent to the Inspector to account for their conduct? And all the while the school staff kept severely silent. They either said nothing at all, or they replied mysteriously that the matter had not ended as yet.



Standing in front of the cinema waving the tickets

Sunday came. All were present, pupils as well as the Vice-principal and his wife. I, however, collected the money and took leave at once as I had to buy the cinema tickets in time. Timidly some of them began to ask the Vice-principal: "Sir, where are you taking us?"

"To prison!" he cruelly replied. Then, as the Vice-principal, a very humane man, was unable to suppress a smile, one of them ventured to remark: "Indeed, Sir! That's just like you, Sir." Now all laughed!

They went to the railway station. The tickets showed Churchgate.

"So, that's it! Going to the Inspector!" some remarked. The fact was that the educational offices are not far from that station.

"Nonsense!" declared another. "Are you forgetting that it is Sunday today? All offices are closed."

From that moment spirits audibly and visibly rose. It could not be so bad after all. Only my own mysterious disappearance still remained a great question mark to them.

On arrival at Churchgate it was not the way to the Inspector which was taken. "We are here in the neighbourhood of Eros Cinema," some boys said wonderingly, still without guessing what was going to happen! When they were led round the last corner, the boys saw me standing in front of the cinema house waving tickets. Cheers rang out! The *enemies* slapped each other on the shoulders from exuberant joy. The *absent-minded professor*. To each I gave a small packet of peanuts to much. All of them laughed straight through the film. And the roasted peanuts tasted especially good!

After the film a lunch was served in the restaurant opposite. "Ah, of course!" the boys commented. "After all, we paid for this too!"

No trace of discord was left. The result was a promise made with a loud laugh: "To-morrow we'll have a hell of a fight again!" Only this time they did not mean it.

RATS

Ingenious little Creatures

SAVE for man himself, the rat is probably at once the cleverest, most destructive and adaptable animal on the face of the earth. From near the frozen Arctic to the blazing desert, this tiny creature, with its remarkable instinct for survival, has not only survived man but at times threatened his extinction!

There are more than 550 species of rats, most of which live in forests, fields and jungles, far from civilization. But centuries ago, a few species made a historic decision: to link their destinies with that of man. They went where man went, ate what he ate and learned his ways.

By the Middle Ages, Europe was overrun by the black rat (*Rattus rattus*). The terrible menace of rats in the West German town of Hamelin in 1284 has been immortalised in the famous legend, "The Pied Piper of Hamelin". According to another legend an enormous horde of another species, the brown rat, appeared out of the east in 1727, swam the Volga River and flooded Europe. Earlier, large hordes also came to Europe in ships from other lands.

When they arrived in Britain, they were given the name Norway rat (*Rattus norvegicus*), from the popular belief that the species arrived on timber ships from Norway. This rat is heavily built, with small ears and a thick tail shorter than the length of its body (9 inches) and may weigh as much as a pound while, in contrast, the

This tiny creature, with its remarkable intelligence and amazing breeding capacity, has defied the scientists in their efforts to eliminate it or at least reduce its population. The heavy damages it causes to our scarce food resources and other precious articles pose a challenge to us.

black rat (roof rat) is more delicate, with large ears and a long, slender tail, and rarely weighs two-thirds of a pound.

The Norway rat, which is also called brown rat, water rat, sewer rat, house rat and by many other names, is a vicious fighter and has generally exterminated its smaller cousin, the black rat, whenever it arrived in a new area. Unlike the roof rat, which can dance up wires to enter buildings several storeys above the ground, the Norway rat is a burrower and can squeeze through 1½-inch openings or swim half a mile through flooded sewers to surface in someone's house through the plumbing!

Today rats of all kinds—brown rats, black rats, white rats, water rats, roof rats, pack rats, field rats, sand rats, desert rats—are firmly entrenched over one-half the world's land surface. In fact, no other mammal, except man, holds equal territory.

A Mass Killer

Everywhere he goes, the rat spreads contamination. Rat-borne diseases may have killed more people than all of the wars in history. Rats carry as many as 35 different diseases. Their fleas spread bubonic plague which killed at least one out of every three persons in Europe in the 14th century and is still feared in the Far East and Africa. This fearsome plague, the Black Death of the Middle Ages, reduced Europe's population by a quarter. During the plague year of 1665 in London, 100,000 persons died. In recent years, it has stricken several thousands in South Vietnam. The fleas also carry typhus, an epidemic disease.

But plague and typhus are not all. The

rat's habit of urinating and leaving droppings wherever he goes are quite serious from the health and hygienic points of view. For, in his blood and intestines there are organisms that cause diseases like amoebic dysentery, jaundice, rabies and some killer diseases.

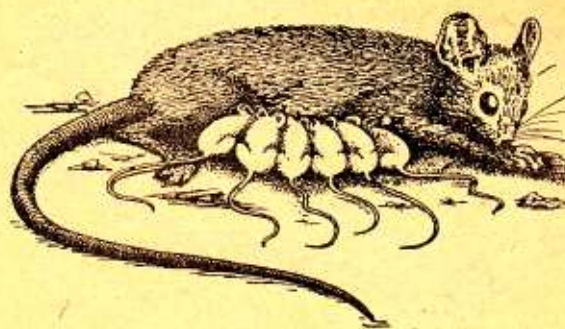
An Indian scientist who works on the W.H.O. expert committee on plague, warned recently that the big increase in the number of field rats (bandicoots) in Bombay poses a grave health problem in that crowded city. Bandicoots not only cause more damage but can also spread plague. (The house rat, in contrast, is more resistant to plague fleas.) The scientist explained that as buildings were increasingly coming up on open fields, the bandicoots were being driven into the city, and their number has increased from one per cent of the total rat population to 45 per cent now!

The rat's amazing powers come from its peculiar and powerful teeth. They have to use their teeth at least half their waking hours. With four sharp incisors that grow about four inches each year, rats just have to keep gnawing on things to file those teeth down. If a rat cannot gnaw, or if one of his incisors gets out of line, the tooth keeps on growing down into his jaw or up into his head, and causes death. So, a rat must constantly rip, cut and grind his incisors through food, walls, doors and even aluminium sheeting.

Rats have been known to cut through lead pipes (apparently out of curiosity about what is inside them) and even through four inches of concrete. They have gnawed holes in dams and started floods. They have plunged parts of cities into darkness by stripping off the rubber insulation from electric wires and causing short circuits.

High Rate of Breeding

Rats breed at a very high rate. They breed in all seasons but mostly in the spring. Their fertility rate is higher than that of most

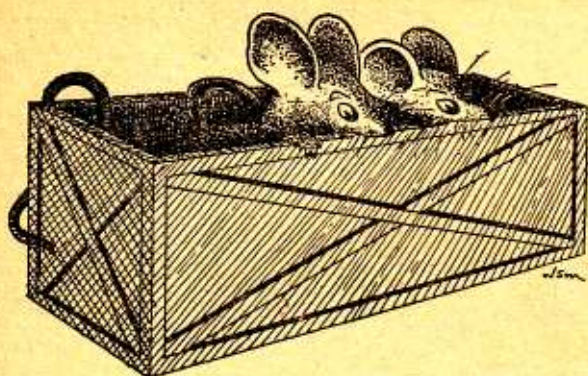


mammals. The female rat has 3 to 5 litters, each of 5 to 10 'babies', per year. Under ideal food and health conditions, a single pair of rats could thus produce, by successive multiplication, anything upto 350 million rats within three years! No wonder, in spite of "successful" measures to wipe them out, the rat population in an area often replaces itself within about a year! Fortunately, a rat lives only about 9 months, and not more than 2 years in any case.

Amazing Intelligence

Grown-up rats are rarely fooled by traps and poisoned baits; they suspect them and generally avoid them. By nature, they avoid anything new and strange. They even warn their 'friends' of the suspicious place or food by dirtying it. But some rats get habituated to a new food if they are repeatedly exposed to it.

Rats are quite clever. A grocer found in his shop, one night, a big rat dipping her tail into sweet oil and, later, her young ones sucking the oil from the tail! The whole process was repeated over and over again. Similarly, a resident of a barren coral island witnessed an astonishing scene. The rats in his house, finding nothing easily available to them, went down to the edge of the water. One by one, each rat dipped his tail into the water and, with a big leap, landed back on the ground. Every time a rat thus landed, there was a juicy crab clinging to his tail!



Colossal Damages

It is important to know about rats because of the tremendous amount of damage rodents cause to precious food stuffs. With its devastating teeth, a rat can tear into and burrow through dozens of sacks—flour, grain and everything—in a warehouse within an hour's time. Besides eating up large quantities, they contaminate a lot more.

The loss of food grains due to rats is really quite large. Even at a conservative estimate, if we take the total rat population in our country to be 2,400 million and if only *half* of them lived on food grains, consuming just *one* ounce of grains per day on an average, the total loss per year would still be 120 lakh (12 million) tons—which is twice what we imported during 1974-75. In the world as a whole, it is estimated that about 25 per cent of all the food is lost to rodents.

Preventive Methods

Europeans of the Middle Ages tried many controls—traps, drowning, even burning their fur or putting a bell around their necks in the hope that the bad smell or noise would drive away the other rats! Professional rat-catcher guides were established, and a good rat-catcher was an honoured man in the town. Special rewards were given to those who could present 5,000 tails.

How can rats be wiped out (eliminated) or at least the damages caused by them

minimised? As with many other troubles, prevention is better than cure. In homes, the most effective remedy is to close all openings rats may possibly come through, and also to leave no food accessible to them. Once rats find that they can't get any food, they will automatically vacate that place. But this is easier said than done. With their ingenuity, rats find loopholes least suspected by us, and thrive in our homes.

Chemical poisons are usually necessary. Among the well-known chemicals (rodenticides) used to kill rats are Zinc Phosphide and Aluminium Phosphide. The former is a poison used with some food stuff to entice the rat; the latter (more poisonous) is a fumigator, dropped into rat-holes and burrows of field rats (bandicoots) to produce fumes which will kill them. A more recent device used is the 'anti-coagulant chemical'. This is least poisonous and kills rats more slowly but surely. It causes internal bleeding in a rat and before the other rats understand the cause, they too fall victim to it.

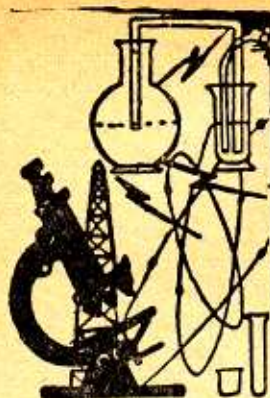
Useful Research Animals

It is strange but true that many of the same characteristics that make rats so hated by mankind, have helped make them excellent 'pets' or specimens for laboratory work. Originally, some sick rats of the common brown species were selected for this purpose. Later they were bred and rebred to produce an almost standard rat whose white coat and pink eyes are far more agreeable than his dark cousin, and who does not have such nasty habits.

Scientists prefer these white rats because they do not cost much, they need only a small space, they eat almost anything, the time span of generations is short, they have large litters and they are easy to handle.

Today, this creature serves thousands of laboratories as a valuable research animal on which a variety of medical tests are carried out for the knowledge and benefit of mankind.





SCIENCE NEWS AND NOTES

PLASTIC WASTES RE-USED

Japanese technologists are making ingenious efforts to re-use plastic wastes, thereby not only solving the difficult problem of their disposal but also using them to advantage. Successful processes have been evolved for these, though only on a limited scale of re-use so far. About a 100 plants have come up in Japan exclusively for this purpose, in recent months. The problem with plastic wastes is that they can be neither decomposed nor burnt up. A very high temperature is required to burn them up and, besides, this produces bad gases.

It has been found easier to re-use the comparatively clean wastes found in plastic factories. In this process, the plastic wastes are crushed into small pieces, which are then melted by heat and moulded or compressed into bars, piles, boards, flowerpots, etc. Other re-made products include plastic pipes for water supply and drainage.

The same method is used for the re-use of plastic wastes from homes. But this task is more difficult as these plastics are much less clean, comparatively. Nevertheless, this project is also given importance and regular arrangements have been made to collect such plastic refuse.

The Plastic Waste Management Institute, set up in 1972, has evolved another technique for re-use of the wastes to make artificial reefs on the sea bottom for fish. For this, the wastes are crushed and melted, mixed with heated sand and then formed into solid blocks. The Fisheries Agency has found these 'reefs' to be effective and useful.

Recovery of Oil

Since plastics are made from naphta, which is an intermediate product in the process of refining crude oil, some technicians successfully hit upon the ingenious idea of doing the reverse to extract oil from plastic wastes! This

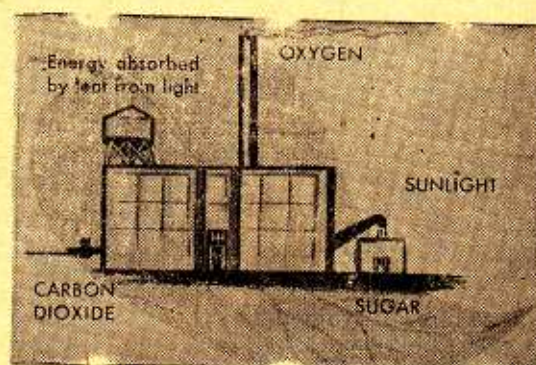
has been accomplished by the pyrolysis technique (decomposing chemically by heat), taking advantage of the property of plastics to change into oil and gas at the relatively low temperature of 400° to 500°C. In this process plastic wastes, crushed into pieces about 1 cm in diameter, are heated in a melting furnace. The molten pieces are sent into a reactor to extract oil through pyrolysis. The plant, put up for this project, is capable of processing about 5 tons of plastic wastes per day. This process is, however, too costly at present for practical application. Efforts are, therefore, being made to lower the costs by enlarging the plant and increasing the processing capacity.

The Secret of Plants' Healthy Growth

Plants grow in the freezing tundra as well as in the hot torrid zone. What are the genetic differences that enable them to adapt to such wide variations? The answer to this question may help in breeding better food crops.

A team of nine botanists from the US and Canada studied this problem at the Duke University, USA. They chose 19 soyabean and cotton species which were very sensitive to temperature. They measured the amounts of two plant pigments present under various temperatures. The ratio of the amounts of the pigments and the chlorophyll, they found, was related to temperature. These pigments play a major role in photosynthesis. The ratio determines the plant's ability to trap sunlight and convert it into carbohydrates.

Further studies with more plant species are planned with the aim of developing methods to improve the plants' efficiency of photosynthesis and to make them adapt to the natural conditions around them.



A picturesque illustration of the process of photosynthesis

THE RESIDENT PATIENT

by A. CONAN DOYLE

Sherlock Holmes and his assistant, Dr. Watson, returning home late from a long walk one evening, found a closed coach waiting at their door. It was a call from a medical practitioner, Dr. Percy Trevelyan, a specialist in nervous diseases. "A very strange series of events has occurred in my house in Brook Street . . . and it was quite impossible for me to wait another hour before asking for your advice and assistance," Dr. Trevelyan told Holmes.

2—TWO STRANGE VISITORS

SHERLOCK HOLMES sat down and lit his pipe. "You are very welcome to both," said he, "pray let me have a detailed account of what has disturbed you."

"One or two of the events are so small," said Dr. Trevelyan, "that I am almost ashamed to mention them. But the matter is so strange and what happened recently is so important, that I shall lay it all before you, and you shall judge what is essential and what is not."

"To begin with, I am compelled to say something about my own college career. I am a London University man, you know, and I am sure you will not think that I am unduly singing my own praises if I say that my student career was considered by my professors to be a very promising one. After I had graduated, I was fortunate enough to rouse great interest by my researches in King's College Hospital, and finally to win the Bruce Pinkerton prize and medal by the book on nervous complaints to which your friend has just referred."

"But I had no capital. Suddenly, however, an unexpected event opened up quite a new chance to me. This was a visit from a gentleman by the name of Blessington

who was a complete stranger to me and who plunged into business in an instant.

"You are the same Percy Trevelyan who has had so grand a career and won a great prize lately?" said he. I bowed.

"Answer me frankly," he continued, "for you will find it to your interest to do so. You have all the cleverness which makes a successful man. Have you the tact?"

"I could not help smiling at the suddenness of the question. 'I trust that I have my share,' I said.

"Any bad habits? Not drawn towards drink, eh?"

"Really, Sir," I replied.

"That's all right! But I was bound to ask. With all these qualities why are you not in practice? Come, come!" said he, in his fast way, "It's the old story—more in your brains than in your pocket, eh? What would you say if I were to start you in Brook Street?"

"I stared at him in surprise.

"Oh, it's for my sake, not for yours," he cried, "I'll be perfectly frank with you, and if it suits you, it will suit me very well. I think I'll sink my savings in you."

"But why?" I gasped.



"Who has been in my room? Come up and look."

"Well, it's just like any other gamble and safer than most."

"What am I to do then?"

"I'll tell you. I'll take the house and run the whole place. All you have to do is wear out your chair in the consulting-room. I'll let you have pocket money and everything. Then you hand over to me three-quarters of what you earn, and you keep the other quarter for yourself."

"This was the strange proposal, Mr. Holmes, with which that man Blessington came to me. It ended in my moving into the house the next day and starting practice on very much the same conditions as he had suggested. He came himself to live with me as a resident patient. His heart was weak, it appears, and he needed constant medical care. He turned the two best rooms on the first floor into a sitting room and bedroom for himself."

"He was a man of strange habits, avoiding company and rarely going out. His life was irregular, but in one respect he was

regularity itself. Every evening, at the same hour, he walked into the consulting-room, examined the books, put down five and three pence for every guinea that I had earned and carried the rest off to the strong box in his own room. From the first his plan was a success, I must say and during the last year or two I have made him a rich man."

"So much, Mr. Holmes, for the past. Regarding what has occurred now. Some weeks ago, Mr. Blessington came down to me in great anxiety. He spoke of some big theft, or burglary, committed in the West End and he appeared to be quite unnecessarily excited about it, saying that a day should not pass before we should add stronger bolts to our windows and doors."

"For a week he continued to be in a peculiar state of restlessness, looking continually out of the windows, and ceasing to take the short walk which he usually took before his dinner. From his manner, it struck me that he was in terrible fear of something or somebody, but when I questioned him on the point, he became so rude that I was compelled to drop the subject. Gradually, as time passed, his fears reduced him to the pitiable state in which he now lies. Two days ago I received the letter which I now read to you. Neither address nor date is attached to it:

'A Russian nobleman who is now resident in England, would be glad to avail himself of the medical assistance of Dr. Percy Trevelyan. He has been for some years a victim to nervous attacks, on which, as is well known, Dr. Trevelyan is an authority. He intends to call at about a quarter past six to-morrow evening, if Dr. Trevelyan will make it convenient to be at home.'

"This letter interested me deeply. I was in my consulting room when, at the appointed hour, the boy showed in the patient. He was an elderly man, thin, modest and by no means the picture one forms of a

26

INDIA

(Answers to January quiz)

I. What was the status of India before it became a Republic in 1950?

It was a federation of many provinces with a federal government which had 'Dominion' status, within the (British) Commonwealth just like, for instance, Canada.

II. Which States are at present under President's Rule? Why?

Gujarat.

The President dismissed the government and dissolved the State Assembly as unrepresentative in April 1974. The State Governor who is now directly in charge of the administration, is answerable to the Parliament.

III. When were the last two General Elections held in our country? When will the next Elections be held?

In 1967 and 1971.

They must be held before mid-1976. However, they may be held earlier if the party in power wishes.

IV. What is the constitutional difference in the relationship of India with Sikkim, Nepal and Bhutan?

Nepal is an altogether independent country. Bhutan is independent but also a protectorate of India. Sikkim is a former 'princely state' which became a 'protectorate' in 1950. It is now federating with India by having representatives in our Parliament.

V. Name the following: 1. Chairman of the Atomic Energy Commission. 2. Union Minister for Railways. 3. Chief Minister of U.P.

1. Dr. H. N. Sethna 2. L. N. Mishra till his death on January 2. 3. H. L. Bahuguna

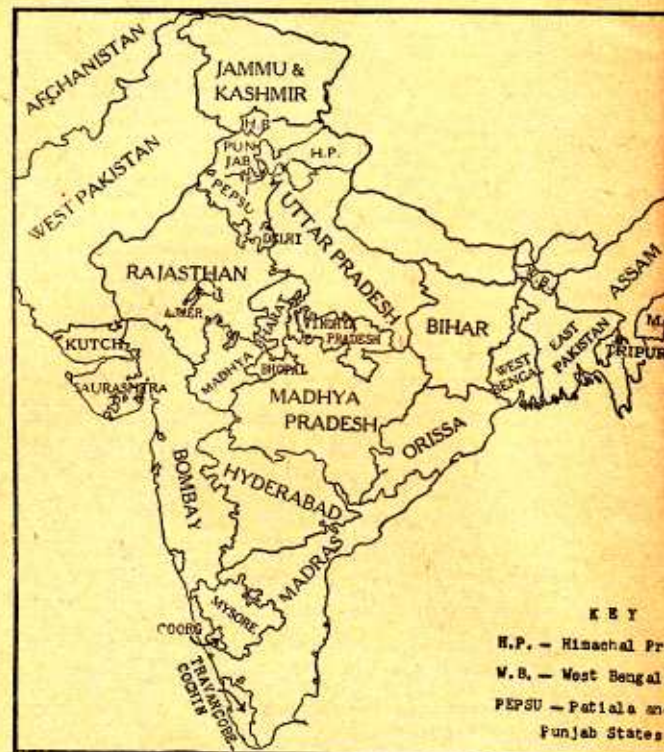
VI. Where are the following located? 1. New Hindustan Machine Tools watch factory. 2. Central Building Research Institute. 3. Indian Institute of Science. 4. Tata Institute of Fundamental Research.

1. Srinagar 2. Roorkee (U.P.) 3. Bangalore 4. Bombay.

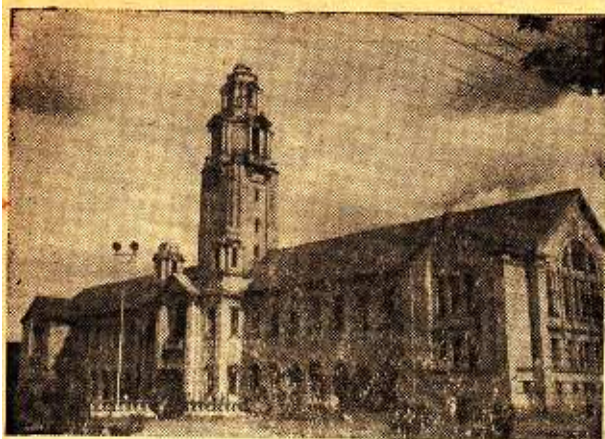
VII. Mention three of the most important commodities (by value) being a) exported b) imported by our country.

(a) Cotton and Jute—about Rs. 400 crores; Tea—about Rs. 150 crores; Metallic Ores—about Rs. 140 crores; Iron and Steel about Rs. 95 crores.

(b) Crude Oil and Petroleum Products—about Rs. 1300 crores; Machinery—about Rs. 350 crores; Food grains—about Rs. 300 crores; Fertilisers—about Rs. 100 crores.



Our nation's map at the time of Independence. Compare with present map and see the changes.



The Indian Institute of Science

VIII. Why did the Government of India ask our Davis Cup team to concede a walk-over to South Africa in the finals?

To express our strong disapproval of South Africa's racial policy ("apartheid"). Our government has no official dealings with South Africa.

IX. What do the following abbreviations stand for? 1. SITE 2. SAIL 3. MISA 4. ONGC.

1. Satellite Instruction Television Experiment
2. Steel Authority of India Ltd. 3. Maintenance of Internal Security Act 4. Oil and Natural Gas Commission.

X. State whether the following statements are true or false. If you think a statement is false state your reason.

1. Our Government has asserted its moral right to manufacture the A-Bomb.

False. (It has asserted its moral right to carry out nuclear explosions for peaceful purposes.)

2. The opposition groups in Patna are demanding that the State Government should be handed over to them.

False. (They are only demanding fresh elections to the State Assembly.)

3. Elections for a State Assembly can be held only once in five years.

False. (They must be held whenever no party is in a position to form a stable government.)

4. Except in one or two states like Gujarat, more than half the Indian people are non-vegetarian.

True.

February, 1975

POINTS WINNERS

(November '74)

HOW WELL HAVE YOU READ THIS ISSUE?

2 Points: Sunil Chopra 9720, Ravindra Cavale 1690, Sanjay Doshi 1495, Kannan R. 2000, Atul Dixit 8998, Samindra Das 1553, Rajesh Pradhan 9856, Yezdi Talati 7400, P. Bobby George 8009.

1 Point: S. V. Chalapathi 9300, Nitin Gokhale 8417, Shrinivas Rao 8960 Hitendra Vaidya 9002, Pramod Khera 9597, Soumesh Pati 7221, Aparajita Pati 9896, Milind Dighe 8781, D.V.S. Raj 8811, Vijay Inamdar 4733, Deepak Doraiswamy 2004, D. Ramesh Raghunath 977/36 Sanjiv Tipnis 7044, Rekha Gupta 8754, Felix Mascarenhas 9800, C. S. Balakrishnan 9742.

A QUIZ ON FESTIVALS

3 Points: S. V. Chalapathi 9300, Shrinivas Rao 9860, Mita Chatterjee 8756, P. Bobby George 8009, Gouri Wagadarikar 8375, Nivedita Kalbag 9880, Rekha Gupta 8754, C. S. Balakrishnan

2 Points: Nitin Gokhale 8417, Ravina Advani, 9587/5, Atul Dixit 8998, Pramod Khera 9597, Sunil Chopra 9720, Ravindra Cavale 1690, Cyprian Sylva 9205, Felix Mascarenhas 9800, Leonardo D'Souza 2003.

1 Point: Kishin Mirani 9827, T. R. Rajeswari 1430, Zohra Rahman 9530, Rajesh Pradhan 9856, Milind Dighe 8781, Rohit Manaktala 1537, Sudesh Sharma 9838, Vijay Inamdar 4733, Deepak Doraiswamy 2004, S. Sudha 9749, D. Ramesh Raghunath 977/36, Pratap Reddy 8138.

(December '74)

HOW WELL HAVE YOU READ THIS ISSUE?

2 Points: A. Venkatraman 1808, Malini Kini 9958, Atul Dixit 8998, P. Bobby George 8009, Sudha Srinivasan 9749, Leonardo D'Souza 2003.

1 Point: D. V. Sunder Raj 8811, Mita Chatterjee 8756, Deepak Malkan 977/4, Satish Chand 2080, Sunil Chopra 9720, Felix Mascarenhas 9800.

A QUIZ ON 1974

4 Points: Atul Dixit 8998.

3 Points: Bijon Bhattacharjee 9728, Mita Chatterjee 8756, Satish Chand 2080, Sunil Chopra 9720, Leonardo D'Souza 2003.

2 Points: Milind Dighe 8781, P. Bobby George 8009, Sudesh Sharma 9838, C. S. Balakrishnan 9742.

1 Point: Felix Mascarenhas 9800, Cyprian Sylva 9205.

FROM PING PONG TO TABLE TENNIS

THE simplicity of its rules and the fact that its equipment can be so easily and cheaply obtained has made table tennis a most popular sport with the young and the old, the man in the street and royalty.

Sportsmen of every type have found it an excellent way of conditioning themselves: It gives agility to the player, demands good footwork and lightning speed and promotes faster reflexes. Psychologists have stressed the game's great contribution to higher efficiency in people's work. After a good game of table tennis, people return to their task refreshed and with increased energy. Most Japanese companies today provide tables and a 'ping-pong' break during the day to their workers.

Table tennis began as a parlour game a hundred years ago in England with mostly improvised and home-made equipment. Books, placed on a table represented the net. The racket or bat was cut out of a piece of thick cardboard. The balls supplied then were either of rubber or cork and, frequently, were covered with a knitted web or a piece of cloth to prevent damage to furniture and to give a spin to the ball. Bats were then made in various shapes and materials. Their handles were exceedingly long and sometimes their blades were hollow and covered with parchment or leather, giving them the appearance of small drums! The introduction of the hollow, feather-light celluloid ball before 1900, completely revolutionized the game, giving it new impetus, extraordinary speed and split-second precision. Various firms patented different sets of equipment. Fancy names were chosen, like **Whiff Whaff, Flim Flam** and, more popularly, **Ping Pong**. The last name stuck because it imitated the two sounds the ball made: **ping** when the racket hit the ball, and **pong** when the ball hit the table.

After some years, the popularity of the game declined until one day a man, named E. C. Goode, gave it a new lease of life. He noticed a studded rubber cash-mat, which struck him as an ideal surface for a ping-pong bat, as it would give the player much greater control over the ball. He bought the mat and, trimming it to the right proportions, glued it to a ping-pong bat. He soon demonstrated the vast superiority of his improved bat. At the national final he beat the English champion 50 games to 3 because of the novel bat alone!

SPORTS

Champions of leading nations, including China, will be seen in action at Calcutta this month, contesting for the titles at the 33rd World Table Tennis Championship.



A view of the games in progress at a world table tennis championship

Meanwhile, the Hon. Ivor Montagu, a son of Lady Swaythling, then studying at Oxford University, had become a table-tennis enthusiast. Soon after, the first inter-varsity match, Oxford vs Cambridge, was played. Montagu persuaded his mother to donate the Swaythling Cup which, like the Davis Cup in Lawn Tennis, has become the much-coveted and treasured international table tennis trophy. In 1933 a Frenchman instituted the Corbillon Cup for the world women's team championship.

By 1939, the International Table Tennis Federation included more than 30 nations, among whom England was still leading, having 260 leagues with almost 3,000 clubs. But Britain was displaced first by the Americans and Czechs, who in turn were overtaken by the Hungarians, the Japanese and the Chinese as world champions.

THE JAPANESE 'REVOLUTION'

MANY people believe the revolutionary 'Pen Holder' grip was largely responsible for taking the Japanese—and the Chinese—to

SPOTLIGHT ON TABLE TENNIS

the top of the table-tennis world. Whereas most T.T. players in the world grip the bat with the thumb on the front of the bat and the first finger behind it, 'pen-holder' players place both the fingers behind the bat. Some even hold the handle between the thumb and the first finger, with the blade hanging downwards. The chief implication of this style of play is that the player uses only one side of the bat. All the Japanese champions, who have dominated the world T.T. championships since 1952, have employed a fluent and rhythmical pen-holder style.

But it is by no means this novel grip alone that has taken the Japanese to the top. The sponge-rubber bat, when first introduced by the Japanese over 20 years ago, caused a sensation and started off a great debate. It was the first new bat since E. G. Goode's. Finally, this bat was approved for use in international matches in the form of the 'sandwich' bat—a studded rubber sheet backed by a layer of sponge rubber. The maximum thickness allowed was 4 millimetres. The 'standard' racket, with only studded rubber covering, is also allowed, of course.



Former Japanese champion, Hiroji Satoh, seen in action with a sponge bat and the pen-holder grip.

However, not all Japanese players employ the pen-holder technique. Very many of them use the 'normal' grip. Also, the Japanese did not invent the pen-holder grip. It had been used in Europe before but was given up. Besides, the covered bat is not necessarily the most powerful 'weapon'. Indeed, some players prefer a plain wooden bat as an effective antidote for the powerful spins imparted by the sandwich bat.

HOW CHAMPIONS ARE MADE IN CHINA

CHINA, whose men and women T.T. players have often won the world championship titles (including last year's), has one of the most rigorous schemes to spot and groom young talent. Its coaching scheme is made up of three parts: 'Preliminary' training for the age-group 8 to 11 years, 'Graduate' training at the ages 11 to 15 years and 'Competitive' training for the older players who are likely to make the international grade. The nation's past champions teach at the Peking Institute where promising 11 year-olds are sent from the provinces for coaching and selection. Those who make the grade at 15, stay to train for international competitions. The others return to their home towns as trainers.

Training at the Peking Institute covers not

only techniques of the game but also physical exercises, especially for foot-work and stamina. Along with this goes the development of the fighting spirit which was visible most recently in Chinese athletes at Teheran. Point-winning aggression at times of extreme pressure is expected of them.

A good example of the rigorous coaching is the training for 'Stroke Stability': every trainee is required to execute a variety of forehand strokes alone 1,000 times, without a single mistake! Similarly, they must become masters in making and receiving 'service', with top spin, side spin and under spin, all disguised. At the Peking Institute they even show films of major matches for their trainees to study.



FEW-MANY and LITTLE-MUCH

by Michael Vodden

I AM going to write a few words, this month on the uses of *little* and *few*.

I said a *few* words, and you must have understood from that first sentence that I was going to write something but not a great deal. I might have said, "I am going to give you a little advice" or simply, "I thought I would write a little."

A *few* words means some but not in number; a *little* advice means some but not much in quantity.

A mistake that is often made is in using *little* and *less* incorrectly in place of *few* and *fewer*.

I wish I had eaten less (in quantity).

They scored fewer goals than we did (in number).

"Less goals" would be wrong.

A *few* therefore means some but not many and a *little* means some but not much.

Few means "only a few" or "very few" and *little* means "only a small amount" or "a very small quantity".

Look at these examples:

Few men are born to be great.

Many come but *few* are chosen.

Few elephants are white.

There were *few* tips I could give him.

He had *little* chance of escape.

There was *little* he could do about it.

Little was left at the end of the meal.

In spite of the danger he showed *little* fear.

I wonder if you can decide for yourself whether 'a *few*' and 'a *little*' or *few* and *little* are the opposite of many and much.

EXERCISE

Fill in the gaps with *little* or *a little*, *few* or *a few*:

1. Have you got any coins? Yes, but only _____.
2. _____ people could have imagined the manner of Gandhiji's death.
3. At the end of the dry season _____ water is left in the rivers.
4. As we walked along, we met _____ villagers and they all seemed glad to see us.
5. Since there was _____ water in the river I jumped in and had a swim.
6. There was _____ to be done so we did nothing.
7. _____ knowledge is a dangerous thing.
8. As we walked along we met _____ villagers but they all seemed glad to see us.

TO HELP YOU SPELL

When 'ei' and 'ie' both say 'ee'
How can we tell which it shall be?
Here's a rule you may believe
That never, never will deceive—
And all such trouble will relieve—
A simpler rule you can't conceive.
It is not made of many pieces
To puzzle daughters, sons and nieces;
Yet with it all the trouble ceases.
After 'C' an 'E' apply;
After other letters 'I';
Thus a general in a siege
Writes a letter to his liege;
Or an army holds the field
And will never deign to yield;
While a warrior holds a shield
Or has strength his arms to wield.
Three exceptions we must note
Which all scholars learn by rote;
'Weir' and 'weird' are two of these,
For the other we have 'seize'.

A POOR man named Cuoi was going from his native village to Muong Vang, a few miles away. On the way he stopped to relax by the shore of an immense lake. Right in front was a flock of wild duck swimming and flapping in the middle of the lake. He watched them idly and wondered at the number. Just out of curiosity he began to count them. "... four hundred and one, four hundred and two ..." Suddenly he was disturbed by the sound of a bell. Turning round he saw a mandarin, proudly riding his fine brown horse.

"You dirty fellow, what are you doing here?" called the rich man gruffly, "Give way to my horse. Don't you know who rules this place?"

Having ready wits, Cuoi answered quickly, "Your lordship, I am minding my ducks," he said, pointing to the ducks. "I was not aware that this place belonged to your lordship."

The sight of so many ducks floating on the water aroused the mandarin's greed. "I want to buy the flock of ducks. Sell them to me!" he demanded.



"I was not aware that this place belonged to your lordship."

The Greedy Mandarin

"Your lordship, it can't be done. I earn my living on them. If I sell them now how will I live? Please allow me to give your lordship a few so that your lordship may taste their flesh while sipping your brandy.

The mandarin, however, insisted that he wanted all, and when Cuoi would not agree he got angry. "You good-for-nothing rogue," he shouted, "I am the ruler of this land. If you don't sell, I'll confiscate all. Out of pity for you I offered to buy them."

Thus 'poor' Cuoi was compelled to sell them against his will. While receiving the glittering gold pieces from the mandarin he pretended to be very sad. "Please don't gather them at once," he said. "Let them eat their fill. If you gather them right now, they will scatter away, for they are used to me, and may be afraid of a stranger." Then he bowed low and left.

At dusk, beaming with pleasure, the mandarin sent a bamboo boat to drive the ducks home. But all the ducks soared up and disappeared in the clouds. Only then did the foolish ruler understand that Cuoi had played a trick on him. Coming ashore hurriedly, he sent men to bring Cuoi to him, but Cuoi was not to be found anywhere.

Puzzles and Pastimes

Simple Arithmetic

"Adding increases a number and subtraction decreases it," said the Teacher.

"I know a number that I can decrease by adding something to it," spoke up the bright pupil.

"Really!" said the Teacher.

"And I know a number that I can increase by subtracting something from it," said another.

Do you know what they are?

Look At Your True Self!

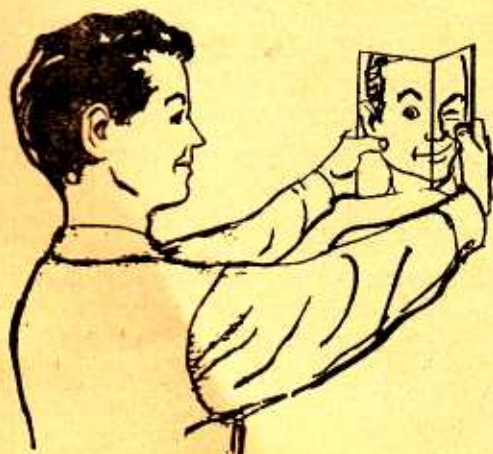
Do you want to see how you really look to other people—your left to your left and your right to your right and not the other way about as you usually see yourself in the mirror? Try this interesting and simple experiment.

Material Needed:

Two pocket mirrors, without frames.

Method:

Hold the mirrors at right angles to each other as shown in the picture. Look directly into them and adjust their positions until you see a perfect image of your face. If the angle of one of the mirrors is less than a right angle

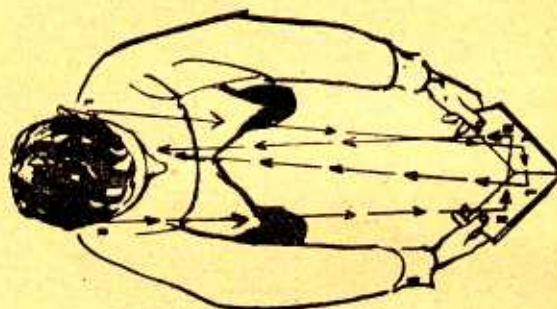


it will make the image of your face too wide, and if more than a right angle it will make the image too thin.

Now wink your right eye. In the mirror, the eye you would expect to wink doesn't wink at all; it is the other eye that winks! You are seeing your face the way it looks to others, not the reversed image you normally see when you look at yourself in flat mirrors.

Why it happens:

Each side of your face is reflected twice by the double mirror. One mirror reverses it, then the other mirror reverses the reversal, which is the same as no reversal at all—just as two negatives make a positive.



Jumble Quiz

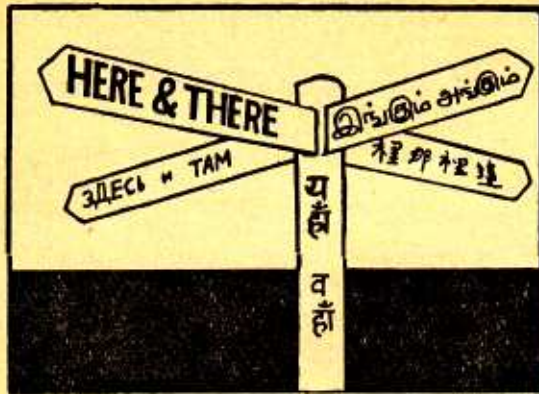
To find the answer to each clue rearrange the letters in the anagrams. Every solution begins with the letter M.

1. Largest city of Canada, lying in the estuary of the St. Lawrence; it is an ocean port and is one of the chief Transatlantic air terminals. (LONE TRAM)
2. College of Oxford University noted for its beautiful tower. (GLAD NAME)
3. Nineteenth-century English Prime Minister; one of the largest Australian cities was named after him. (ONE RUMBLE)
4. Roman god of commerce and messenger of the gods; his name is given to the planet nearest the sun and to the only metal that is liquid at ordinary temperatures. (CURRY ME)

Four Ones

What is the maximum value that can be got with four "one"s. (i.e. with 1, 1, 1, 1.) (E.g. The maximum value that can be got with two "two"s is 22).

—sent by V. Ravindranathan 1987
(Answers on p. 33)



America's Experiment in 'Co-operative Education'

ALL work and no play makes Jack a dull boy" is a well-known expression. Nowadays, the expression might be paraphrased to read: "All study and no work makes Jack irrelevant".

Studies must have a bearing on what is going on in real life. Educational institutions in U.S.A. have pioneered a programme known as "co-operative education", which today involves 100,000 students. Co-operative education integrates classroom theory with practical experience. It is studying for a few weeks, then working at a full-time job for a few weeks, and so on to the completion of requirements for a degree. Some colleges adopt the system of "twinning": One student works while his 'twin' studies, then they switch places. This doubles the number of pupils a college can handle and makes things easier for the employers too.

The work that the student does relates to the field of study he is following. An architectural student works in a drafting office, a law student works in a law firm. At some institutions, every student must work full time at a job during part of his time in college in order to graduate, although no academic credit is granted for it. At other institutions, the programme is optional. It takes the student longer to get his degree, but upon graduation he usually commands a better salary than other new college graduates.

Co-operative education started with engineering colleges but is used even by liberal-arts colleges whose students may do social welfare

work, take part in archaeological expeditions, or do projects for government agencies. Last year over 100,000 students were involved in nearly 500 of America's 3000 colleges and universities. Student-earnings from such co-operative work which is especially useful for low-income families, amounts to \$225 million per year now.

Evolution of the Spectacle

THE origin of eye glasses is interesting. Today we see big round glasses and frames of all shades and patterns, quite often used for fashion rather than necessity.

It is said that the Roman emperor Nero (37-68 A.D.), was short-sighted and that he used precious stones to look at circus games. Seneca, the philosopher, some years his senior, used a transparent sphere filled with water to read. It was the concave and convex surfaces that helped to overcome their eye defects. The first real eye glasses, however were invented in about 1300. These were known by different names. The French called them 'petite lune' meaning little moon. In the 18th century some were held before the eyes with a handle and some were pinched on to the nose. Later, they were given short side pieces to stick under the hair. It was hard to get all the way to the ears because of the wigs worn in those days. But spectacles were considered fashionable (because they were expensive) and were made of gold or silver.

Today 'glasses' are made of lighter materials including plastics and of shapes and sizes to suit different faces. Not only are there bifocals and trifocals but contact lenses have become popular recently. These are worn on the eye itself and can even be tinted to flatter the wearer! Contact lenses must be flexible so as not to damage the delicate tissues of the eye.

From Garbage to Electricity

IN the State of Connecticut, U.S.A., where a woman has been elected Governor for the first time, plans have been laid to convert all the State's household and commercial garbage into fuel for electricity. By 1980, this scheme, the first of its type in the world, will collect 10,000 tons of garbage in 10 regional treatment centres. This will replace air-polluting open garbage dumps.

Russian nobleman. His companion was a tall young man, surprisingly handsome, with a dark, fierce face, and the limbs and chest of a Hercules. He had his hand under the other's arm as they entered and helped him to a chair with a gentleness unusual for a man of his appearance.

"You will excuse my coming in Doctor," said he, speaking English with a slight lisp. "This is my father, and his health is a matter of the most serious importance to me."

"You would, perhaps, care to remain here during the consultation?" said I.

"Not for all the world," he cried, in horror. "It is more painful to me than I can express. If I were to see my father in one of those dreadful attacks, I am convinced that I should never survive it. With your permission, I will remain in the waiting-room, while you go into my father's case."

"To this, of course I agreed. The patient and I discussed his case. He was not very intelligent and his answers were frequently vague which I thought was because of his limited knowledge of English. Suddenly, however, as I sat writing, he ceased to give any answer at all and I was shocked to see that he was sitting bolt-upright in his chair, staring at me with a perfectly blank and fixed face. He was again in the grip of his strange disease.

"There was nothing very abnormal in any of these conditions, which agreed with my former experiences. I had obtained good results in such cases by using Nitrate of Amyl. The bottle was downstairs in my laboratory, so, I ran down to get it. There was some little delay in finding it, five minutes, let us say, and then I returned. Imagine my amazement to find the room empty and the patient gone!

"Of course, my first act was to run into the waiting room. The son had gone also! The hall door had been closed, but not shut. My boy who admits patients, is a

new one and by no means quick. He had seen nothing, and the affair remained a complete mystery! Mr. Blessington came in from his walk shortly afterwards, but I did not say anything to him upon the subject, for, to tell the truth, I have got into the habit now of saying as little as possible to him.

"Well, I never thought that I should see anything more of the Russian and his son, so you can imagine my amazement when at the very same hour this evening they both marched into my consulting-room, just as they had done before.

"I feel that I owe you a great many apologies for my going away so suddenly yesterday, Doctor," said my patient.

"Well, the fact is," he remarked, "that when I recover from these attacks my mind is always very clouded as to all that has gone before. I woke up in a strange room, as it seemed to me, and made my way out into the street in a sort of dreamy condition when you were absent.

"And I," said the son, "seeing my father pass the door of the waiting room, naturally thought that the consultation had come to an end."

"Well," said I, laughing, "there is no harm done, except that you puzzled me terribly; so if you, sir, would kindly step into the waiting-room, I shall be happy to continue our consultation."

"For half an hour or so I discussed with him and then, saw him go off on the arm of his son.

"I have told you that Mr. Blessington generally chose this hour of the day for exercise. He came in shortly afterwards and passed upstairs. An instant later I heard him running down like a man who is mad.

"Who has been in my room?" he cried.

"No one," said I.

"It's a lie," he yelled, "come up and look."

(to be continued)

ROCKETS

BY YOU

A **ROCKET** is the only means by which one may travel in space. An aeroplane relies on the atmosphere for lift and there is no atmosphere in space.

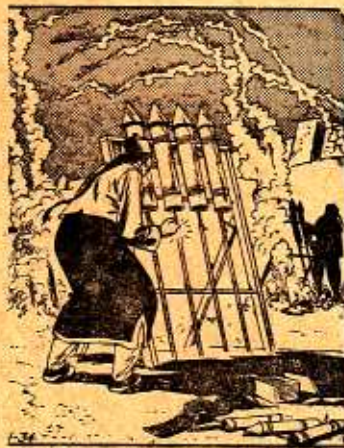
Rockets seem to have been invented in China by the 12th century. There is even a story of a Chinese harnessing 47 large rockets to his chariot but this led to his end. By the 17th century rockets were used in many countries as weapons of war.

The rocket works on Newton's Third Law: For every action there is an equal and opposite reaction. An example will make this clear—Do you not go upstairs by pushing down with your foot? To go up a rocket pushes the gases down from the lower end.

In the rocket are tanks containing the 'propellants'—the materials to be burnt. Usually liquids are used as propellants, though gases or solids may be used. The propellants take up most of the space and weight—up to 90%. They are usually contained in two tanks—one for the fuel and one for the oxygen to burn it with.

The propellants are burnt in the combustion chamber. Pumps are used to pump the liquid from the tanks to the combustion chamber. The pumps are driven by a turbine run on chemically produced steam.

Valves are inserted at certain points to control the flow of the liquid. Injectors protrude in the combustion chamber and with their fine nozzles convert the liquid propellants into a spray of tiny droplets. Igniters are used to start the rocket—the temperature ranging upto 3000°C. To cool the combustion chamber a liquid is introduced in the double walls of the chamber.



The Chinese first used the rocket in 1232 A.D. Those were like the sky-rockets now used for fireworks, which have no fixed course and travel only a few hundred feet.

PLEASE READ CAREFULLY

Contributions should not exceed 500 words. Your teacher should certify that it is your own work. Please say (for our information only) where you got your idea from. Mention your Name, Age, School and SR. No.

Drawings must be in Black ink. Photographs (independent, or illustrating your article) should be very clear, on glossy paper. Points will be awarded for all contributions published.

No replies can be sent, nor contributions returned, unless sufficient postage is enclosed. Unclaimed contributions will be destroyed after 3 months. Send to: BY YOU, Sunshine, Poona 1, Maharashtra.



The greatest step forward in the development of rockets was the invention of the multi-stage rocket, in which all the stages, except the final one, fall away when the fuel has burned out. Such rockets enabled man to put into orbit even "artificial moons" to circle the Earth.

This type of cooling is called regenerative cooling.

Rockets have their pay loads in the 'nose' (top-most part). To overcome gravity and get into an orbit around the earth, a speed of 7 miles/second is needed. So two or three-stage rockets are used. As each stage is exhausted another starts with the advantage of height and speed of the previous one. The exhausted stage is broken off and discarded by carefully timed explosives.

Rockets are very useful. They are used in all space programmes to take men from the earth to space and vice-versa. Missiles are also rockets—with explosives in their nose. Small rockets are used in helping planes to take off and fly. There are many other uses also.

—Sudhir Bafna 9980, Baroda

(4 Points)

SHIPWRECKED !

It was the 12th of January '67. My parents and I were on our way to Italy from Greece. The sun was shining brightly burning the ship's deck. The sea was calm and the sky was cloudless. Silently the ship moved on cutting the waves in two. The only sound was the screeching of sea gulls. Down in the cabins people were chatting merrily. There were about a hundred people going to Italy and fifty more to Spain. We passed our time reading books, playing games or just sleeping. The deck outside was very hot and to come up even for a few minutes was almost impossible. This forced us to stay indoors during the day time.

At about 7 p.m. when nearly all the people had come out on deck, the weather began to change. Patches of dark clouds became visible and a strong wind started blowing. This was followed by rain. All became wary as they realised that there was going

to be a storm. We all went down to our cabins to avoid the rain, which had by now become quite strong.

A little later the Captain announced that a storm was imminent and advised us to be calm as there was nothing to be afraid of. But a great fear enveloped me as my thoughts went back to the stories about shipwrecks and people getting drowned in the sea. I thought that the same thing was going to happen to us.

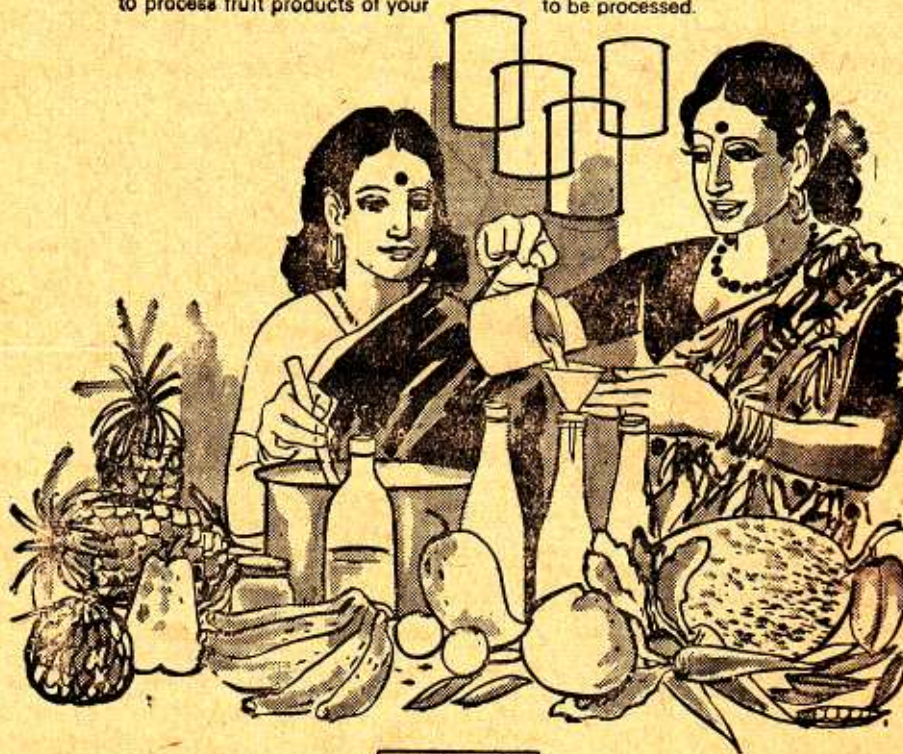
Suddenly the Captain told us to go up on deck as it was dangerous to stay below. As soon as we reached the deck we were at once attacked by the rain. It was like a nightmare. Lightning streaked through the sky splitting it into two. The thunder was deafening. The ship rocked from side to side. Waves rose high and splashed on to the deck.

Down in the engine room, the crew were trying to start the engine which had gone

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eat what you can
and
can what you like

davp 74/406



An Irishman returning home from work one evening was prevented by heavy snowfall from reaching his house, and stayed the night with a friend.

Next morning he sent a message to his employer which read: "Sorry, cannot come to work this morning. Have not got home yesterday yet."

* * *

Teacher: Now, if you take 29 from 87, what's the difference?

Student: That's what I say, Miss, who cares!

* * *

Prakash: A little bird told me what kind of lawyer your father is.

Subir: What did the bird say?

Prakash: Cheep, cheep

Subir: Oh yeah? Well, a duck told me what kind of doctor your father is.

* * *

Mechanic to owner of an old broken-down car:
"Let me put it this way: If your car were a horse, it would have to be shot."

* * *

A young author sent a manuscript to an editor, with a letter in which he stated: The characters in this story are purely fictional and bear no resemblance to any person living or dead.

A few days later he received his manuscript back with the pencilled note, "That's what's wrong with it."

* * *

Smarty: More than 5000 elephants go each year to make piano keys.

Smarter: Really? It's remarkable what animals can be trained to do.

* * *

Puncture: A little hole in a tyre, usually discovered at a great distance from a garage.

* * *

The examination question was rather puzzling. It asked why 'psychic' was spelled with a 'p'.

The young man in the far corner did not know the answer but he did feel he could not leave a blank. Shaking his head he wrote, "It pccertainly does pseem psilly."

* * *

"I'd like you to paint a portrait of my late uncle."

"Well, bring him in."

"I said my late uncle."

"Well, bring him in as soon as he gets here."

* * *

A farmer on his visit to the city was fascinated by the tarred roads. Scraping his feet on the hard surface, he remarked, "Can't blame them for building a town here. The ground's too hard to plough, anyway."

* * *

"Could you mend these boots for me?" asked the customer.

"Well, I could," replied the shoemaker as he examined the footwear. "With a new pair of soles and heels and some new uppers, they ought to be as good as new, Sir. There's nothing wrong with the laces!"

* * *

A young man was seated opposite an old lady in a bus. For some time he was vigorously chewing gum.

—

Finally, the old lady leaned forward and said, "It's so nice of you to try and make conversation, but I must tell you I'm stone deaf."

* * *

Judge: Who do you think is the best actor?

Actor Witness: Myself.

Judge: Don't you think that's rather conceited?

Actor Witness: Perhaps, your Honour, but I'm under oath.

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AMPICILLIN Anhydrous—
the drug of the decade.**

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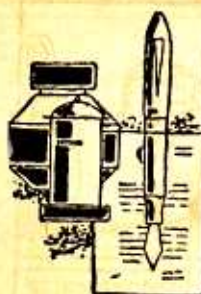
Ampicillin Anhydrous: what every Intensive Care Unit knows as the SOS antibiotic. The broad-spectrum, quick-acting drug that has given the world a new lease on life, will now be available to millions of Indians. Ampicillin Anhydrous is the latest in a long line of life-savers manufactured by Hindustan Antibiotics in bulk—Penicillin, Streptomycin, Hamycin and Vitamin C, all frontliners in the life & death battle against killer diseases like tuberculosis, pleurisy, pneumonia.

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INDIAN

G. V. G. Prasad, (b 15)
R. No. 997,
Moghul House,
Sainik School,
KORUKONDA 531214,
Dt. Vizag, A.P.
Stamps, novels, sports.

Subhash Mishra, (b 14)
C/o Shivprasad Mishra,
At & P.O. BAHADARPUR,
Tal. Parola, Dt. Jalgaon, Mah.
Reading, chess, sports.

S. Sundaresan, (b 18)
C/o P. Seethuramalingam,
22 Goods Shed Road,
POLLACHI 642001,
Dt. Coimbatore, Tamil Nadu.
Penfriendship.

Krishna Kumar Ladha, (b 18)
The Belsund Sugar Co. Ltd.,
14, Netaji Subhas Road,
CALCUTTA 700001.
Skating, cricket, view cards.

Anirudha Das, (b 14)
80, Babupara, Gorabazar,
P.O. BERHAMPORE,
Dt. Murshidabad, W.B.
Stamps, penfriends.

M. R. Kalavathy, (g 14)
C/o R. Muthuswamy,
16, T. B. Road,
MADURAI, Tamil Nadu.
Collecting pictures, photography.

S. Prem Doss, (b 18)
Kamala Vilas,
P.O. NELLIKAKUZH
695524
Trivandrum Dt., S. Kerala.
Stamps, view cards, coins.

Aniruddha Gudi, (b 13)
R. No. 533,
Adilshahi House,
Sainik School,
BIJAPUR 586102,
Karnataka.
Swimming, reading, acting.

Sanjiv Gupta, (b 13)
11/2 Maskati Court,
M. Karve Road,
BOMBAY 400020
Stamps, music, reading.

Rajnish Sood, (b 16)
C/o Shri P. C. Sood,
Principal,
Central School,
PATHANKOT, Punjab
Stamps, view cards, reading.

Dhananjay R. Shetty, (b 17)
Bldg. No. 68, Room No. 4
Yeravada,
POONA 411006.
Scouting, sports, swimming.

FOREIGN

Gustavo Brignone, (b 13)
Jose P. Varela 3948,
BUENOS AIRES, C.F.,
Rep. Argentina.
Stamps, football, pop music.

Tomas Ferrari, (b 16)
Centenario 399,
Jauregui, Pua,
BUENOS AIRES, Argentina.
Stamps, football, pop music.

Ramesh Taparia, (b 17)
Ramesh Emporium,
8/269, BIRATNAGAR 8
Nepal.
Swimming, stamps.

Narendra Karwa, (b 18)
C/o Karwa Stores,
Main Road,
BIRATNAGAR, Nepal.
Newspapers, sports.

Kosztai Margit, (g 17)
3905, MONOK,
Kossuth, L.U. 15, Hungary
View cards, stamps, reading.

Vaszil Katalin (g 17)
3909, MA'D,
Magyar Ut, 357, Hungary
Stamps, nature, animals.

Murtaza A. Siwji, (b 17)
P.O. Box 1564,
DAR-ES-SALAAM,
Tanzania.
View cards, correspondence.

Rohana Yusuf, (g 16)
No. 4, Road 53,
Selayang Baru,
SELANGOR, Malaysia.
Penfriendship.

Eve Fulop, (16)
3950 SAROSPATAK,
Pf: 56, Hungary.
Sport, dancing, reading.

Alim Golamally, (b 17)
Cinema Casse,
Royal Road,
TRIOLET, Mauritius.
Sports, stamps, reading.

M. Siddique, (b 17)
281, Dematagoda Road,
COLOMBO 9,
Sri Lanka.
Stamps, view cards, reading.

ANSWERS

SIMPLE ARITHMETIC

The numbers are V and IV.

JUMBLE QUIZ

1. Montreal 2. Magdalen 3. Melbourne 4. Mercury

FOUR ONES

The maximum value that can be got is (11)¹¹
11X11X ... 11 times

GOOD LANGUAGE HABITS

1) A few 2) Few 3) Little 4) A Few 5) A little
6) Little 7) A little 8) Few.



HOW WELL HAVE YOU READ THIS ISSUE ?

State whether the following are 'true' or 'false', giving reasons for 'false' statements. Send your answers to "Contests, Sunshine, Poona 1". The entry should be on an independent sheet, mentioning clearly name and SR Number. 2 Points for correct entries, 1 Point for one-error entries. Last Date: February 28.

1. Grace Bedell, who offered suggestions to Lincoln, met him first in the White House.
2. Rats can never be induced to eat a new food stuff.
3. Thai scouts can control an entire city, without police aid, in an emergency.
4. Plastic wastes in homes can be easily converted into new plastic articles.
5. The pen-holder grip in table tennis was conceived by the Japanese.
6. Every student in America

must work while studying in order to get his degree.

7. The efficiency of photosynthesis in a plant varies with the natural conditions around it.

LAST MONTH'S QUIZ

1. False. (It was introduced in '72 but is now open for girls also.)
2. False. (He said they "may hear all parties" but should not join any party politics.)
3. True.
4. False. (The laser can only separate fissionable uranium—which can produce nuclear power—from the other uranium.)
5. False. (It was mainly because of their destruction during World War I.)
6. False.

- (Over 30 times.)
7. False. (Other animals in that area will continue to remain, so long as none of them is a nuisance to the tiger.)
8. False. (Even a medium-pace bowler can do it.)

CLOSING THOUGHT

You may fool all the people some of the time or some of the people all the time but you can't fool all the people all the time.

—Abraham Lincoln





Ram & Shyam on an evening walk. A strange sight disturbs their talk.



"Look Ram, that's not a thief. It's Slippery Shah, the smuggler chief."



"Hurry Inspector, rush this way. Let's nab those smugglers without delay."



The smugglers run, but start to slip. On the ground their feet don't grip.



"I rolled Poppins packets under their feet! Let's open them and have a treat!"



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